Indian Institute of Technology Patna
CS1101- Foundations of Programming

Lab12: Structures , and Programming

Date: 3-11-2025

Work in a separate directory named **Lab12**.

Task1: Carefully explore the provided Lab12_struct.*c* c program segments. Study each segment demonstrated in the code, and document in your lab record any constructs or features that are new to you, along with brief notes on your observations.

Task2: Write a C program to manage an inventory using structures, functions and pointers. Your program should define a structure Item containing Item ID, Name, Quantity & Price. Write a function to calculate and display the total value of inventory (quantity * price for each item).
Requirements:
- Request for the number of items.
- Use a function to add the items.
- Calculate the total value using a separate function.
- Display the total value with 2 decimal places.

Task3: Write a C program to analyze book prices using structures and functions.

Program Requirements:

• Define struct Book with: title, author, price

• Use a function to find max & min priced book

• Store results in an array results[2]

• results[0] = most expensive book

• results[1] = cheapest book

Task4: Write a C program in which you have to define a structure Result containing student_name, roll_no, and an array marks[5] for storing marks in 5 subjects. Write functions to:

- Input the details of some (2-10) students.
- Calculate and display the total, average, median and mode of marks of each student.
- Calculate and display the average, median and mode of marks of all students.
- You may print "No mode" if all marks are unique

Example

Input:

Student 1: Name: Alice, Roll No: 101, Marks: 85, 90, 88, 76, 92

Student 2: Name: Bob, Roll No: 102, Marks: 78, 82, 80, 75, 79

Expected Output:

Alice:

Total Marks: 431

Average Marks: 86.20

Median Marks: 88.00

Mode Marks: No mode

Bob:

Total Marks: 394

Average Marks: 78.80

Median Marks: 79.00

Mode Marks: No mode

Overall Statistics:

Average Marks: 82.50

Median Marks: 80.00

Mode Marks: No mode

In Record: Task1 , Task 2